

MWI 8071.1

REVISION A

EFFECTIVE DATE: March 22, 2004

EXPIRATION DATE: March 22, 2009

MARSHALL WORK INSTRUCTION

ED01

FRACTURE CONTROL BOARD

CHECK THE MASTER LIST at
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VERIFY THAT THIS IS THE CORRECT VERSION BEFORE USE

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DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		10/28/99	
Revision	A	3/22/2004	Added reference to NASA-STD-5007, updated Master List URL, updated appendix B, updated paragraph formatting (per MPG 1410.2)

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1. PURPOSE

This Marshall Work Instruction (MWI) defines the Fracture Control Board (FCB) process.

2. APPLICABILITY

This Instruction applies to all spaceflight hardware as required in references 4.1, 4.2, and 4.3 below for which MSFC is responsible.

3. APPLICABLE DOCUMENTS

ED22-OWI-001, "Strength Analysis"

4. REFERENCES

Relevant fracture control requirements are contained in the following documents:

4.1 NASA-STD-5007, "General Fracture Control Requirements for Manned Spaceflight Systems"

4.2 NASA-STD-5003, "Fracture Control Requirements for Payloads using the Space Shuttle"

4.3 MSFC-HDBK-1453, "Fracture Control Program Requirements"

5. DEFINITIONS

5.1 Chairperson. The individual designated by the ED01 Director to lead the FCB.

5.2 Alternate-chairperson. FCB member appointed by the Chairperson to lead the FCB in his/her absence.

5.3 Director, Engineering Directorate (ED01). The management official in charge of approving ED assignments to the FCB.

5.4 Director, Safety and Mission Assurance Directorate (QD01). The management official in charge of approving QD assignments to the FCB.

5.5 Fracture Control Board (FCB). A team of MSFC personnel chartered to review and approve the fracture control of all MSFC spaceflight hardware.

5.6 Fracture Control Board Technical Secretary (FCBTS). FCB

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member assigned from ED22 who acts as an assistant to the Chairperson.

5.7 Project/Program Organization (PPO). The MSFC organization charged with project management responsibility for the project or program.

6. INSTRUCTIONS

6.1 FCB Process. The FCB reviews the fracture control programs for applicable MSFC spaceflight hardware.

6.1.1 Fracture control related data are developed by the PPO and submitted to the FCB for review and approval according to the schedule of the project/program design reviews as detailed below.

Project/Program Design Review	Data Required
circa the Systems Requirements Review (SRR)	Fracture Control Plan
circa the Preliminary Design Review (PDR)	Fracture Control Plan Update; Preliminary Fracture Mechanics Analysis Results
circa the Critical Design Review (CDR)	Fracture Control Plan Update; Fracture Mechanics Analysis Results Update
30 days prior to the Functional Certification Audit (FCA) or Pre-shipment Review	Complete Fracture Control Report

Fracture control data may be provided to the FCB in written form and/or oral presentation. When requested by the PPO, the FCB also reviews specific fracture control issues during the design process, after shipment, and/or during the service life of the hardware.

6.1.2 Following each meeting or review by the FCB of project/program fracture control issues, the FCB prepares a memorandum detailing the discussions, any action items, and FCB approval or concurrence. This memorandum is communicated following the procedure detailed in Appendix A.

6.2 Responsibilities.

Actionee

Action

ED01/QD01 6.2.1 Jointly issue FCB appointment letters (See Appendix B).

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ED01	6.2.2	Approve all assignments from ED to the FCB.
QD01	6.2.3	Approve all assignments from QD to the FCB.
Chair-person	6.2.4	Perform the duties assigned to the MSFC FCB.
Chair-person	6.2.5	Assign action items as necessary to correct deficiencies identified in the review process.
FCB	6.2.6	Support the MSFC FCB Chairperson in performing the duties assigned to the FCB.
FCB	6.2.7	Participate in all scheduled FCB meetings.
FCB	6.2.8	Review and comment on documents submitted to the FCB for review.
FCB	6.2.9	Act as liaison with parent organization on issues concerning fracture control.
FCBTS	6.2.10	Schedule FCB meetings and provide meeting notification.
FCBTS	6.2.11	Distribute documents submitted to the FCB for review.
FCBTS	6.2.12	Collect FCB members comments on reviewed documents.
FCBTS	6.2.13	Participate in all scheduled FCB meetings.
FCBTS	6.2.14	Draft FCB Review and Approval letters.
ED22 Group Records Custodian	6.2.15	Maintain records and files of FCB activity.
PPO	6.2.16	Submit necessary fracture control documents to the FCB for review and approval per the schedule in 6.1.1.
PPO	6.2.17	Participate and support scheduled FCB meetings.
PPO	6.2.18	Respond to action items as assigned.

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6.3 FCB Organization. The MSFC QD01 Director and the ED01 Director assign FCB members and their alternates from the following organizations:

Position	Organization
Chairperson	ED22
Technical Secretary	ED22
Safety and Mission Assurance	QD40
Stress/Fracture Mechanics	ED22
NDE	ED32
Materials/Fracture Mechanics	ED33

The members and their alternates are appointed by letter sent to Centerwide standard distribution (SDL-1). An example letter is given in Appendix B.

7. NOTES

Appendix A contains the procedure for processing FCB memoranda. Appendix B contains a sample FCB appointment letter. Actual appointment letters are prepared on official MSFC letterhead.

8. SAFETY PRECAUTIONS AND WARNING NOTES

None

9. RECORDS

9.1 It is the FCB's policy to document its meetings and reviews by memorandum. The ED22 Group maintains the following FCB records if produced during the MSFC FCB process:

9.1.1 Review and Approval Letter containing action items, if any.

9.1.2 Attendance List.

9.1.3 Similar Documentation Produced by any Follow-on Board Activity, if necessary.

9.2 FCB documentation shall be maintained throughout the life of a project and for a period of not less than 5 years following launch, and 6 years after the launch of the final item of a series. Older documents may be stored as space allows and then be archived or destroyed. Section 8 of ED22-OWI-001, "Strength Analysis," describes the details of controlling the FCB records.

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10. PERSONNEL TRAINING AND CERTIFICATION

None

11. FLOW DIAGRAM

None

12. CANCELLATION

MWI 8071.1 dated October 28, 1999

Original signed by
Axel Roth for

David A. King
Director

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Appendix A

Procedure for Processing FCB Memoranda

A.1 The FCB Technical Secretary drafts a memorandum to transmit information and submits the memorandum draft to the Group Record Custodian.

A.2 The ED22 Group Record Custodian records the memorandum in the ED22 Group Memorandum Log Book. The custodian assigns a unique memorandum number to each draft memorandum as described in Section 8 of ED22-OWI-001, "Strength Analysis."

A.3 The ED22 Group Management Support Assistant (MSA) types the memorandum, making grammatical and format corrections as needed.

A.4 Memorandum concurrence is provided by the FCB Technical Secretary, the FCB Technical Secretary's Team Leader, the FCB Alternate-chairperson, and approved by the FCB Chairperson.

A.5 Upon approval of the memorandum, the ED22 Group Records Custodian records the memorandum's approval in the ED22 Group Memorandum Log Book and files a copy of the memorandum as a Record.

A.6 The Records Custodian shall also provide copies of the memorandum (and attachments) per the distribution instructions provided by the memorandum.

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Appendix B

Example of the Appointment of FCB Members

ED01

TO: Distribution

FROM: ED01/Mr. John W. Kilpatrick
QD01/Dr. N. Jan Davis

SUBJECT: Marshall Space Flight Center (MSFC) Fracture Control Board (FCB) Membership

Effective January 5, 2004, the FCB Chairperson and members, per MWI 8071.1, are as follows:

Dr. Gregory Swanson/ED22	Chairperson
Mr. Pravin Aggarwal/ED22	Alternate Chairperson
Ms. Sara Masterson/ED22	Technical Secretary
Mr. Brian Steeve/ED22	Technical Secretary (Alternate)
Mr. Wayne Gregg/ED22	Stress/Fracture Mechanics
Mr. Rob Wingate/ED22	Stress/Fracture Mechanics (Alternate)
Mr. Craig Bryon/ED32	Non-Destructive Evaluation
Dr. Sam Russell/ED32	Non-Destructive Evaluation (Alternate)
Dr. Preston McGill/ED33	Materials/Fracture Mechanics
Mr. Doug Wells/ED33	Materials/Fracture Mechanics (Alternate)
Ms. Lisa Bonine/QD40	Safety and Mission Assurance
Mr. Terry Hamm/QD01	Safety and Mission Assurance (Alternate)

John W. Kilpatrick
Director
Engineering Directorate

N. Jan Davis, Ph. D.
Director
Safety and Mission Assurance Directorate

Distribution:
SDL-1

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